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(57) **ABSTRACT**

The present invention provides systems and methods in which an irrigation controller uses a regression model to estimate an evapotranspiration rate (estimated ETo), and uses the estimated ETo to affect an irrigation schedule executed by the controller. The regression model is preferably based upon a comparison of historical ETo values against corresponding historical environmental values, with the data advantageously spanning a time period of at least one month, and more preferably at least two months. Data for multiple environmental factors may also be used. The environmental factor(s) utilized may advantageously comprise one or more of temperature, solar radiation, wind speed, humidity, barometric pressure, cloud cover and soil moisture.